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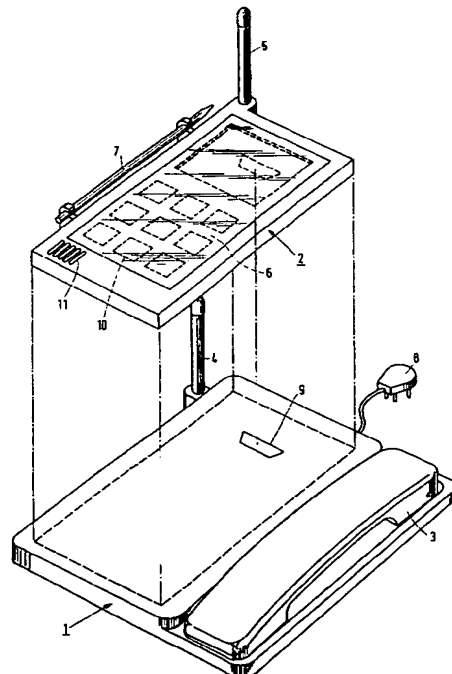
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(54) **Telephone set with a touch-sensitive and detachable control/display panel.**

(57) Telephone set with a base station and a control panel detachable therefrom, the base station and the control panel comprising each a means for communicating with each other in a cordless manner and the control panel comprising an interactive display panel with a touch-screen and/or a graphic tablet and control electronics for the display panel.

With the telephone set it is possible to transmit information such as telephone numbers and spoken and/or written messages to the base station with a finger *via* the touch-screen and/or with a special pen *via* the graphic tablet and to perceive information such as text *via* the display panel.



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The invention relates to a telephone set with a base station and a control panel detachable therefrom, the base station and the control panel comprising each a means for communicating with each other in a cordless manner.

Such a telephone set is known from EP-A-0396190. That publication describes a telephone set whose keypad for dialling telephone numbers can be detachably connected to both the base station and the operation panel. With prior-art telephone set it is possible to hold a conversation with both the base station and the operation panel, the keypad being optionally connectable to either.

Japanese Patent Application no. 62-110252 further discloses a telephone set with a detachable keypad, in which the keypad comprises an infrared send portion and the telephone set an infrared receive portion, so that it is possible for a person to dial a number while being remote from the telephone set.

Recently, telephone sets have been proposed comprising a display panel, for example, an LCD screen, with texts being displayed on the screen that relate to both a telephone call itself and to a list of names with the associated preselect keys, the number of the calling party, the called telephone number and so on, as well as information about service companies such as viewdata, mail order businesses, banks, travelling agencies and so on. Prior-art telephone set also includes an extensible alphanumeric keypad by which text can be input and displayed on the display panel. In this manner a simple communication with one of said service companies is possible. This prior-art telephone set is marketed by the Applicants under the name of Philips Enhanced Telephone.

Finally, EP-A-0421025 has disclosed a data processing system consisting of a flat display panel which comprises a so-called touch-screen for inputting data with a finger and a graphic tablet for inputting data with a special pen. With this system it is possible to use a flat, compact unit both for inputting texts and/or figures into a computer with a special pen and inputting texts and data with a finger by touching a virtual keypad. Furthermore, the system can also display texts and figures. As a result, prior-art system is pre-eminently suitable for use as an interactive interface between a user and a (portable) personal computer.

It is an object of the invention to provide a telephone set which is user-friendly in a manner not achieved thus far with prior-art techniques being implemented.

For this purpose, the invention provides a telephone set of said type, characterized in that the control panel comprises an interactive display panel with a touch-screen and/or a graphic tablet and control electronics for the display panel.

Preferably, the display panel known from EP-A-0421025 is used as a display panel.

According to a preferred embodiment the control panel also comprises means for holding a telephone conversation, such as a microphone and a loudspeaker or headphone. Alternatively, however, it is possible to use a separate handset for holding a telephone conversation, which handset is connected in a cordless manner or not to the base station. If the control panel and the base station comprise each means for holding a telephone conversation and, for example, a loudspeaker and a microphone, it is possible to couple the display panel to the control panel, so that it can be detached, and arrange the base station in such a way that the display panel can also be coupled to the base station so as to be in the position to telephone *via* the base station while using the advantageous properties of the interactive display panel.

According to a further embodiment the control panel is suitable for use as a graphic answering machine, which means that a user can read from the screen a message left for him during his absence. A user, if seeking contact with another subscriber who possesses a similar telephone set, can also leave a written message behind in the absence of that subscriber instead of having to record a message, which recording meets with a psychological barrier with many users. A written message may be obtained by operating the virtual keypad or be written by hand or, if the telephone set comprises a means for handwriting recognition, be written by hand and converted into block letters by the telephone set.

According to yet another embodiment the control panel is also suitable for operation as a remote control for audio or video equipment or remote control for other equipment, such as lights, doors and so on, the display panel displaying a virtual control panel of which the user can touch the keys or controllers with a pen or a finger. The base station or the control panel is then to comprise a means capable of communicating with the equipment to be controlled.

According to yet another embodiment the control panel is also suitable for functioning as a keyboard for a personal computer (PC), the control panel then combining the function of keyboard and display screen of a PC. The control panel may then comprise some form of mouse control for moving the cursor on the screen as desired. At the same time the base station is then to comprise all required intelligence and memory capacity of the PC.

It is observed that the telephone set according to the invention clearly distinguishes itself from the recently marketed Personal Digital Assistants (PDA); because a PDA is a complete device with a microprocessor and all relevant peripheral equip-

ment in a housing, an extended memory, a display panel which may have the form of a touch-screen and so on. Such a PDA is extremely costly and rather bulky, whereas the control panel according to the invention comprises only the bare essential intelligence, memory and communication components and it is the base station that comprises all the intelligence, memory capacity and so on.

The invention will be explained hereinafter by way of an exemplary embodiment with reference to the drawing in which the sole Figure shows a diagram of a telephone set according to the invention.

In the drawing Figure, reference 1 denotes the base station and reference 2 the control panel. The base station comprises a telephone receiver 3 and an aerial 4. In the interior of the base station a means is customarily arranged for letting the base station communicate with the telephone system, for which purpose the base station is connected to the telephone system, for example, a PABX or the public telephone network *via* a cable with a plug 8. If desired, the base station can also communicate in a cordless manner with a telephone system suitable for that purpose. Furthermore, the interior of the base station comprises a means such as a transceiver for communicating with the control panel 2 in a cordless manner *via* aerial 4 and a means, for example, a microprocessor, for processing the data or speech signals generated by this control panel and returning to the control panel either speech signals or other data generated by the base station or not, or supplying to the telephone system either data or speech signals, or storing them in a memory accommodated in the base station. All these means accommodated in the base station are known *per se* and described, for example, in said publications or known from other publications well known to those skilled in the art. Said means will thus not be described in detail, because they are unimportant to a proper understanding of the essence of the invention.

The control panel 2 comprises an aerial 5 for communication with the base station 1 and includes an interactive picture screen 6. The picture screen 6 is preferably of a type described in EP-A-0421025, but any other interactive picture screen which, in essence, is capable of displaying a virtual keypad and alphanumeric data can be used as such with the telephone set according to the invention. Preferably, an active pen 7 is provided, for example, for writing messages and operating the virtual keys 10, a plurality of these keys being diagrammatically shown on the screen 6 by way of example. The control panel 2 comprises not only screen 6, but also a means (not shown) such as a transceiver for communicating in a cordless manner with the base station 1 and a micro-

phone/loudspeaker 11 for holding a telephone conversation *via* the control panel. *In lieu of* a loudspeaker 11, also a light headphone may be connected to the control panel 2, for example, when the facility is used for listening to tracks of compact discs before ordering them from a mail order service. A telephone conversation may also be held *via* the handset 3 which may also be arranged, as desired, for communicating in a cordless manner with the base station 1. If both the control panel 2 and the base station 1 are arranged for communication with a telephone system, such as a PABX or the public telephone network, it is advantageous to detachably connect the interactive display panel 6 to the control panel, so that the display panel can optionally be used in a manner as described in EP-A-0396190 by the control panel and the base station, by simply clipping the display panel thereto and thus realising the desired electrical connections.

From the foregoing it will be obvious that the invention provides a highly user-friendly, easy-operation telephone set which can be used according to needs only as a so-called feature telephone or also in more advanced embodiments as a remote control, PC and so on. The telephone set is highly convenient in that a user can input data or speech into the telephone set or can perceive data or speech generated by the set at the location wanted by the user, remote from the base station and in a position desired by him, for example, with the control panel on his lap in an armchair when teleservices are used, such as viewdata, or at his desk, with the control panel right in front of him, when signs or figures on the touch-screen are input by hand. Finally, it is possible to couple the control panel 2 *via* an appropriate connector on its rear side with a corresponding connector 9 on the base station 1, to operate the control panel there which is fed by the base station and charge the batteries (not shown). This connector may be, for example, a standardized RS232 bus as is used for connecting peripheral equipment of personal computers. This is especially convenient if the cordless connection between the base station and the control panel does not function for some reason (or does not function properly).

It will be evident to the expert that a telephone set with a control panel of the described type with an interactive picture screen knows a large number of other options than those described hereinbefore by way of example.

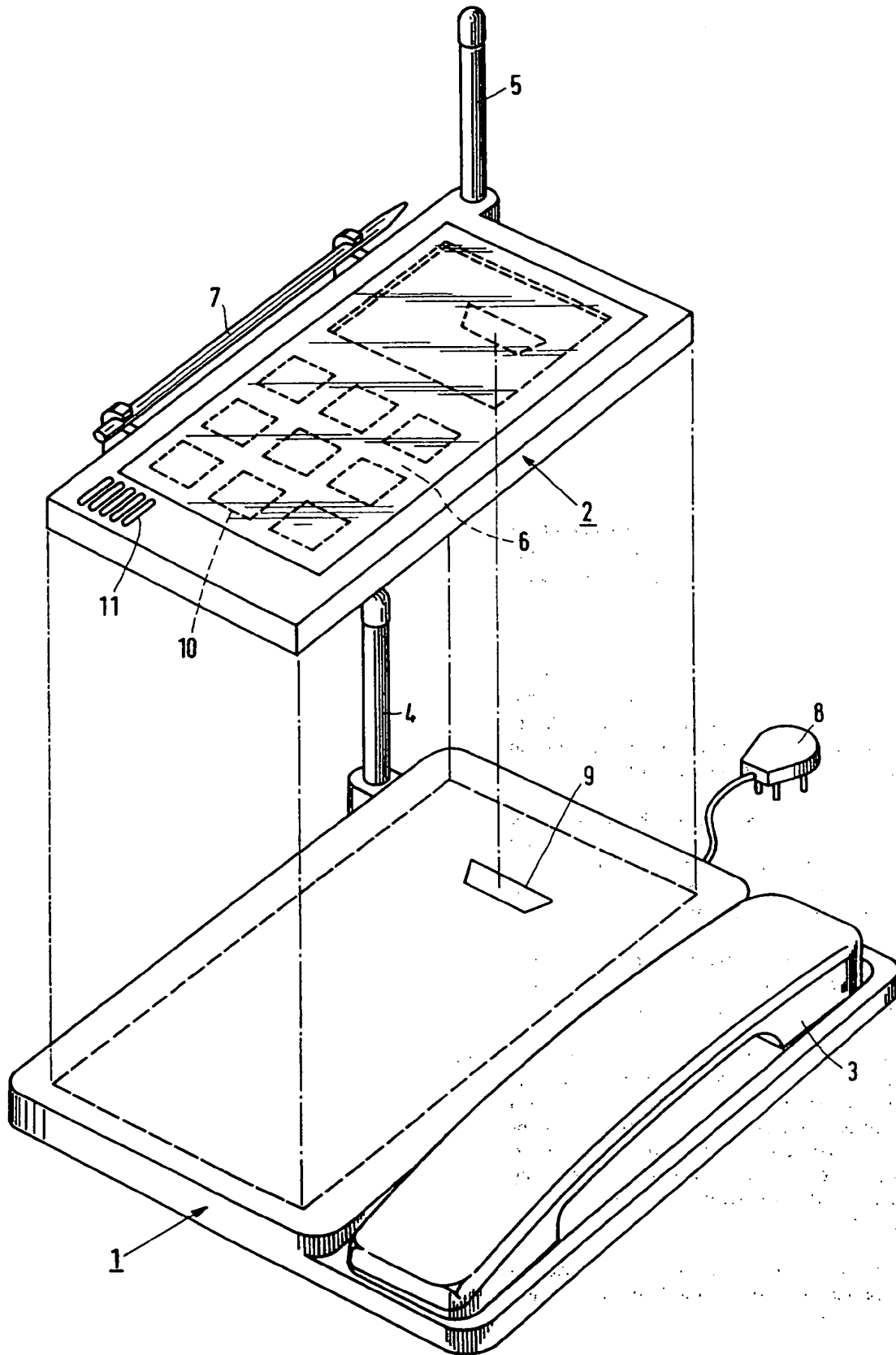
Claims

1. Telephone set with a base station and a control panel detachable therefrom, the base station and the control panel comprising each a

means for communicating with each other in a cordless manner, characterized in that the control panel comprises an interactive display panel with a touch-screen and/or a graphic tablet and control electronics for the display panel.

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2. Telephone set as claimed in Claim 1, characterized in that the control panel comprises a microphone and a loudspeaker for holding a telephone conversation *via* the control panel. 10
3. Telephone set as claimed in Claim 1 or 2, characterized in that the control panel is arranged to operate as a graphic answering machine for receiving and transmitting written or typed messages. 15
4. Telephone set as claimed in at least one of the preceding Claims, characterized in that the control panel is arranged to operate as a remote control for equipment. 20
5. Telephone set as claimed in at least one of the preceding Claims, characterized in that the control panel is arranged to operate as a keyboard and display screen for a personal computer. 25
6. Telephone set as claimed in at least one of the preceding Claims, characterized in that the control panel can be coupled mechanically to the base station with the data and/or speech transmission no longer being cordless. 30
7. Telephone set as claimed in at least one of the preceding Claims, in which the base station comprises a handset, characterized in that the handset comprises a means for cordless communication with a base station. 35
8. Telephone set with a base station and a control panel detachable therefrom, the base station and the control panel comprising each a means for communicating with each other in a cordless manner, and a means for communicating with a telephone system, characterized in that an interactive display panel with a touch-screen and/or a graphic tablet and control electronics are provided, which interactive display panel can be detachably electrically coupled to the base station or the control panel, as desired. 40 45 50
9. Control panel obviously intended to be used in a telephone set as claimed in one of the Claims 1 to 8. 55





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EUROPEAN SEARCH REPORT

Application Number
EP 94 20 2545

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y	EP-A-0 499 012 (OIS OPTICAL IMAGING SYSTEMS) * column 5, line 50 - column 7, line 16; figure 1 * * column 17, line 56 - column 22, line 18; figures 8,9 *	1-3,6-9	H04M1/72
Y	IEEE COMMUNICATIONS MAGAZINE, vol.30, no.12, December 1992, NEW YORK pages 64 - 75 SHENG ET AL 'A PORTABLE MULTIMEDIA TERMINAL' * page 64, left column, line 1 - page 66, left column, line 13; figures 1,2 *	1-3,6-9	
Y	PATENT ABSTRACTS OF JAPAN vol. 15, no. 241 (E-1080) 21 June 1991 & JP-A-03 076 364 (JAPAN STEEL WORKS LTD) * abstract *	1,2	
Y	PATENT ABSTRACTS OF JAPAN vol. 16, no. 307 (E-1229) 7 July 1992 & JP-A-04 086 034 (TAMURA ELECTRIC WORKS LTD) * abstract *	1,2	TECHNICAL FIELDS SEARCHED (Int.Cl.6) H04M
A,D	EP-A-0 396 190 (N.V. PHILIPS) * the whole document *	1,6-9	
A	PATENT ABSTRACTS OF JAPAN vol. 13, no. 298 (E-784) 10 July 1989 & JP-A-01 077 352 (TOSHIBA CORP.) * abstract *	1,2	
A,D	PATENT ABSTRACTS OF JAPAN vol. 13, no. 103 (E-725) 10 March 1989 & JP-A-63 275 248 (NEC CORP.) * abstract *	1,7	
-/--			
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 14 December 1994	Examiner Delangue, P
CATEGORY OF CITED DOCUMENTS: X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application I : document cited for other reasons & : member of the same patent family, corresponding document			

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EUROPEAN SEARCH REPORT

Application Number
EP 94 20 2545

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	PATENT ABSTRACTS OF JAPAN vol. 15, no. 507 (P-1291) 20 December 1991 & JP-A-03 219 320 (MITSUBISHI ELECTRIC CORP.) * abstract *	1,5	
A	WO-A-92 20167 (MOTOROLA INC.) * page 4, line 20 - page 5, line 23; figure 1 *	1,4	
A	US-A-5 237 327 (SAITOH ET AL) * column 2, line 49 - column 3, line 36; figures 1-3 *	1,4	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 14 December 1994	Examiner Delangue, P.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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